

THE MINERAL INDUSTRY OF MADAGASCAR

By George J. Coakley

The Republic of Madagascar, the world's fourth largest island, is located about 420 kilometers east of Mozambique in the Indian Ocean with an area of 581,540 square kilometers. In 1996, the area supported a population of 14 million and an estimated gross domestic product per capita of \$880. Mining plays a secondary role to agriculture and fishing in the economy of Madagascar. The Malagasy mining industry is chiefly noted for its production and export of chemical and metallurgical grade chromite ore, high-quality crystalline flake graphite, and mica. In addition to these minerals, small quantities of gold and rare earths were produced, along with some industrial mineral commodities, including cement, feldspar, a variety of semiprecious gemstones, quartz and salt. Production of refined products from imported petroleum remained modest, while exploration for hydrocarbon resources continued. There is an active, but largely uncontrolled, artisanal gemstone mining sector, with known but unreported production of emeralds, sapphires, and other semiprecious stones. Estimates of 1996 production levels of all mineral commodities are shown on table 1. Environmental concerns continued to delay development of the ilmenite sands deposit near Toalagnaro discovered by QIT-Fer et Titane Inc. of Canada, a subsidiary of Rio Tinto Plc of the United Kingdom, while Phelps Dodge of the United States was actively exploring two nickel-cobalt deposits near Ambatovy and Analamay.

The chromite industry, located in Andriamena, is controlled by the parastatal Société Kraomita Malagasy. Graphite operations were owned and operated by five main companies, all headquartered in Antananarivo. Société Minière de la Grande Ile's Ambatomitamba graphite mine is the largest single producer. The other four operators are Etablissements Gallois,

Société Louys, Etablissements Izouard, and Etablissements Rostaing. The Government had significant influence on foreign-owned mining operations through taxes, royalties, and official approval of all foreign exchange transactions.

The Office des Mines Nationales et des Industries Stratégiques (OMNIS) is involved primarily in research, joint ventures, and promotion of Madagascar's mineral resources, including hydrocarbons, and acts as the repository of the acquired exploration data. The Ministry of Energy and Minerals is primarily responsible for the energy sector.

For a more detailed description of the industry, see the 1995 Minerals Yearbook review. The next, more comprehensive industry review is scheduled for the 1997 edition. Please contact the U.S. Geological Survey Madagascar country specialist for more current information.

Major Sources of Information

Ministry of Energy and Mines

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TABLE 1
MADAGASCAR: PRODUCTION OF MINERAL COMMODITIES 1/

(Kilograms unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/
METALS					
Beryllium: beryl in quartz concentrates, industrial and ornamental e/	3,000	3,000	3,000	31,666 r/ 3/	32,000
Chromium:					
Chromite concentrate, gross weight metric tons	69,123	60,900	42,700	49,702 r/	54,900
Chromite ore, lumpy do.	91,700	83,300	47,500	56,405 r/	82,300
Total do.	160,823 r/	144,200	90,200	106,107 r/	137,200 3/
Gold, mine output, Au content e/ 4/	500	500	500	38 r/ 3/	500
Rare-earth minerals: e/					
Bastnasite (60% REO) metric tons	5	5	5	5	5
Monazite (55% REO)	100	100	100	100	100
INDUSTRIAL MINERALS					
Abrasives, natural (industrial only) e/	10,000	10,000	10,000	10,000	10,000
Cement, hydraulic e/ metric tons	60,000	60,000	60,000	60,000	60,000
Clay: Kaolin do.	756	700 e/	700 e/	1,545 r/	1,500
Feldspar e/	4,000	4,000	4,000	2,120 r/ 3/	2,000
Gemstones: e/ 5/					
Amazonite	2,000	2,000	2,000	2,000	2,000
Amethyst:					
Gem	1,700	1,700	1,700	1,700	1,700
Geodes	80	80	80	80	80
Graphite, all grades, shipments metric tons	8,910	11,200	12,715	16,119 r/	16,000
Mica, phlogopite: e/					
Block do.	4 3/	4	4	1 r/ 3/	1
Scrap do.	716 3/	700	700	389 r/ 3/	390
Splittings and sheet do.	78 3/	70	70	42 r/ 3/	40
Total do.	798 3/	774	774	432 r/ 3/	431
Ornamental stones: e/ 6/					
Jasper	68,300 3/	68,000	68,000	68,000	68,000
Labradorite	61,654 3/	61,000	61,000	61,000	61,000
Quartz: e/ 7/					
Crystal	32,000	32,000	32,000	32,000	32,000
Piezoelectric	66,000 3/	66,000	66,000	66,000	66,000
Rose quartz	27,666 3/	27,000	27,000	27,000	27,000
Smelting	180,000	180,000	180,000	180,000	180,000
Salt, marine e/ metric tons	30,000	30,000	30,000	30,000	30,000
Stone: e/					
Calcite, industrial do.	2,000	2,000	2,000	2,000	2,000
Dimension stone do.	3,000	3,000	3,000	3,000	3,000
Marble, cipoline	1	1	1	1	1
MINERAL FUELS AND RELATED MATERIALS					
Petroleum refinery products: e/					
Gasoline thousand 42-gallon barrels	900	900	225 3/	450	450
Kerosene and jet fuel do.	400	400	100 3/	200	200
Distillate fuel oil do.	290	290	70 3/	140	140
Residual fuel oil do.	500	500	125 3/	250	250
Other do.	20	20	5 3/	10	10
Total do.	2,110	2,110	525 3/	1,050	1,050

e/ Estimated. r/ Revised.

1/ Includes data available through December 1997.

2/ In addition to the commodities listed, modest quantities of unlisted varieties of crude construction materials (other clays, sand and gravel, and stone) presumably are produced, but output is not reported quantitatively, and available information is inadequate to make reliable estimates of output levels.

3/ Reported figure.

4/ Does not include an estimate of smuggled artisanal production.

5/ Reported output of other gemstones for 1996 in kilograms: Cordierite 3,942; Garnet 31,607; and Tourmaline 176,256.

6/ Other ornamental stones produced in 1996 for which data is reported in kilograms: Agate 9,335; Apatite 16,982; Aragonite 569; Calcite 43,419; Ruby 48,194; and Sapphire 94.

6/ Other forms of quartz mined historically and estimated production in kilograms: Geodes 2,500; Hematoid 300; and other ornamental quartz 3,000.